The Mining Journal

Established 1835

Railway & Commercial Gazette

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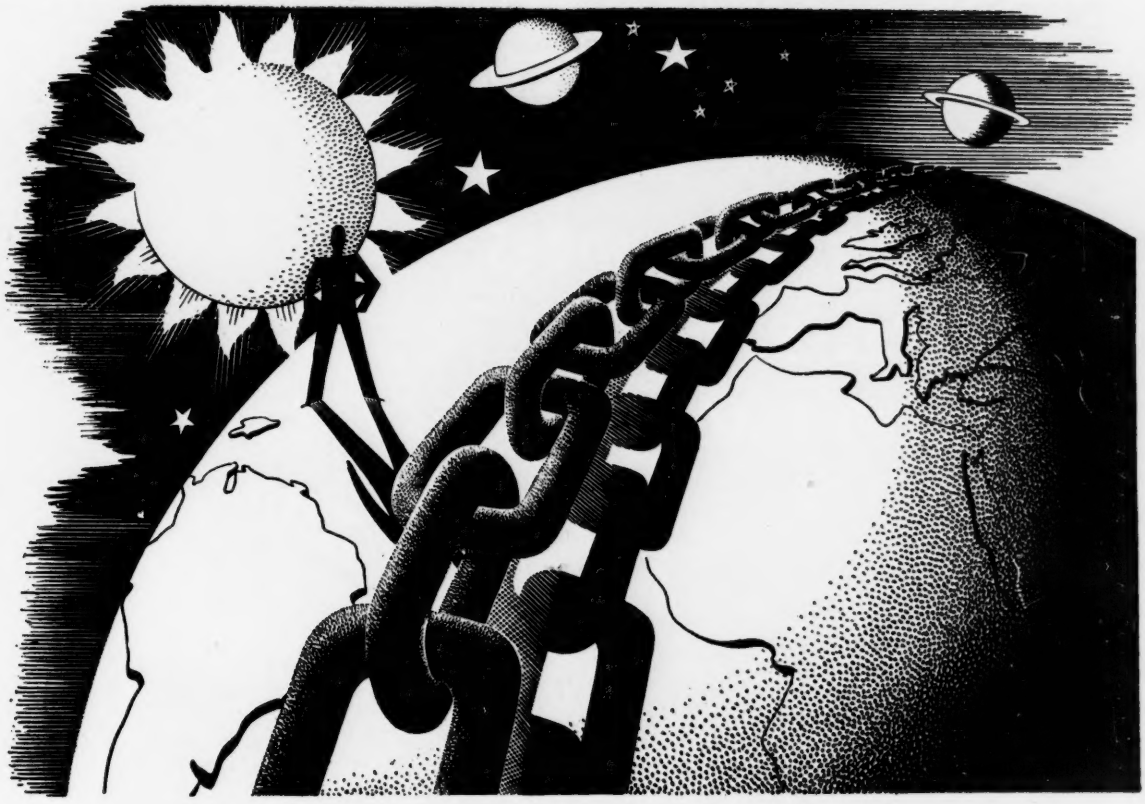

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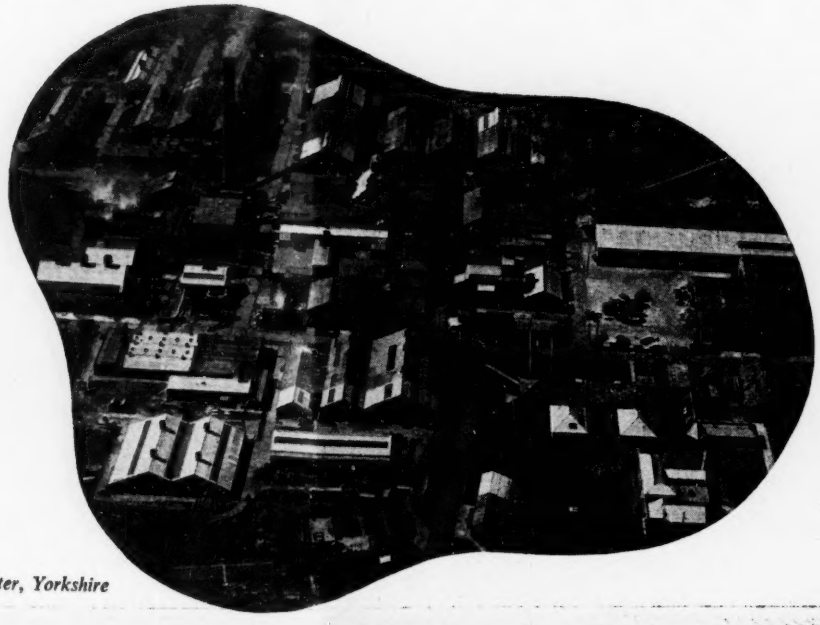

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NOTES AND COMMENTS

Mining Progress in Cyprus

The report of the retiring Inspector of Mines for Cyprus, Mr. W. Parry James, for 1952, showed another big increase in the value of the minerals exported but no notable change in the quantity of production. Apart from the fact that mineral values have since tended to decline, the most important question for the future of the industry is the finding of fresh mineral deposits in this small island which has been worked for the past 3,000 years. While some discoveries were made in the year under review, they were not of an outstanding character.

Total value of exports, which were a record for the sixth successive year, amounted to £10,374,836, a gain of £2,391,499 on the achievement of 1951. Copper concentrates accounted for 47 per cent of the total value of exports at £4,848,705; cupreous pyrites exports were 146,672 tons valued at £1,364,049; and 2,175 tons of cement copper valued at £323,284 further increased the percentage of cupriferous materials shipped. Production did not show a like advance. The Mavrovouni mine mined 743,560 tons of cupreous pyrites which was a record figure, though not greatly in excess of the 1949 output. Hellenic Mining Company had a lower output at 195,779 tons from its Kalavosos mine; 56,300 tons, about unchanged, from its Sha mine, and 24,709 from its new Agrokipia property. The Cyprus Sulphur and Copper Company mined 35,641 tons from its Kinousa and Limni properties as against 8,180 tons in the previous year.

The Cyprus Mines Corporation did a considerable amount of work underground but did not add to its ore reserves. The company's Skouriotissa, Mathiati and Apliki mines continued closed throughout the year. At the last-mentioned property exploratory drilling failed to reveal any ore. The acid leaching plant at Xeros was completed during the year at a cost of £500,000 and has improved the recovery of copper from the mill feed by ten per cent.

The Hellenic Mining Company carried out an extensive exploratory campaign with a total of 37,312 ft. drilled. One discovery was made in the Mitsero-Agrokipia area in the northern foothills of the main Olympus range. This deposit had been previously prospected with disappointing results but later work revealed an iron pyrites deposit of some importance.

The Cyprus Sulphur and Copper Company was engaged in the opening up of the discovery made in 1950 in the Kinousa section where an adit below the previous bottom level was completed and connected with No. 1 shaft. A cross-cut revealed a width of 145 ft. of good grade sulphur ore but the high zinc and copper values encountered in the upper levels were not maintained. Development results on the adit level were inconclusive. A small amount of selective mining was also done on the Limni ore bodies. A new power station and compressor house were erected together with buildings, plant and equipment at a cost of £106,600.

Turning to other minerals, the Cyprus Asbestos Mines produced 16,294 tons of fibre from 1,842,403 tons of rock quarried. Late rains at the opening of the working season were responsible for the output being somewhat lower than in 1951. Production by the Cyprus Chrome Company from their Troodos mine again declined and amounted to 16,611 tons of ore yielding 6,402 tons of concentrates. Development did not correspond to the stoping rate and the improvement in reserves shown in 1951 was not maintained. In view of the smallness of the reserves, more prospecting was undertaken and should this yield satisfactory results, the life of the mine may be extended for several years. There was a big increase in the exports of gypsum which totalled 52,302 tons due largely to the fall in freight rates. The principal producer was the Gypsum and Plaster-Board Company, a subsidiary of the Hellenic Mining Company. Further increase in shipments is expected in the current year, given favourable shipping rates. Shipments of terra ombra were again seriously down at 3,417 tons but the amount mined was only 1,600 tons compared with 15,226 in the previous year.

The local belief in the existence of oil occurrences dies hard and a local company sank a test well which had reached 4,100 ft. by the end of the year, without satisfactory results.

The labour situation was generally satisfactory and wages were raised in correspondence with the cost of living figure. There was no shortage of labour during the year, indeed,

there was an excess of workmen applying for employment. Increasing mechanization has also helped to discourage strikes especially at the big Mavrovouni mine. Fatal accidents numbered only three in a total of 6,585 persons employed but there were 37 non-fatal accidents underground at this last mentioned property.

Uranium from Rhodesian Granites

Presenting a lecture entitled "The Future of the Atomic Age" before the congress of the South African Association for the Advancement of Science, Professor A. E. H. Bleksley, head of the Witwatersrand Faculty of Applied Mathematics, envisaged that the most important source of atomic fuel in the world would probably be the ancient granites, "such as the great granite domes of the Matopos." He thus forecast that Rhodesia might become a foremost uranium producer, as in his lecture, delivered before the congress in Bulaway on July 1, he said that "each ton of Matopos granite contains a quantity of uranium equivalent to approximately four tons of coal."

The speaker added that known large scale deposits of uranium would soon be exhausted. The supplies of Canada, the Belgian Congo and the reserves contained in the gold-bearing ores of the Witwatersrand were unlikely to be able to meet a world wide demand for a limitless time. In due course, therefore, it would become necessary to utilize as sources of uranium the scattered supplies of low concentration which would require the development of extraction techniques similar to those utilized in the recovery of gold from ores of the Witwatersrand. He felt that when this problem of suitable extraction methods had been solved, the most important source of world atomic fuel would in all probability be ancient granite.

Professor Bleksley declared that in combination with Wankie coal resources and the water supply of the Zambesi, atomic energy would make the development of a considerable chemical industry possible in the north-western portion of Southern Rhodesia. Given unlimited power for pumping, water from the vast rivers of Central Africa could be used to irrigate large tracts of land which currently are merely arid. By the use of these energies, therefore, it would be possible to convert Africa into "one of the world's great food producing areas."

Effects of Minute Impurities in Metals

In an address delivered before the American Society for Testing Materials in Atlantic City, Dr. Jerome Strauss, vice-president of the Vanadium Corporation, retraced the many instances during approximately the last four decades in which minute amounts of elements added to metals and alloys have brought improvements in purity rating. Almost limitless boundaries could now be envisaged in the field of the metallurgy of minute additions.

It is indicative of progress in this sphere that the expression of quantities as atomic percentages or gram-molecules per volume unit is being considered in place of the more traditional weight percentages hitherto accepted. Indeed, if finer forms of metals and alloys can be developed by the addition of minute amounts of additives, it would appear that the more pure products thus presented will become the rule and will bring in their wake an increasingly high standard of demand and a widening market.

Speaking in general terms, Dr. Strauss pointed out that the use of elements of low atomic weight and high chemical reactivity was the *raison d'etre* for the majority of the observed instances of improvements in properties. The elements concerned, such as lithium, beryllium, boron, sodium, magnesium, aluminium and calcium, were grouped in their periodic system of elements and were comprised in groups 1, 2 and 3. Heat of formation was high with certain of the elements with these compounds thus formed, and in the majority of cases the elements named were active in their association with oxygen, nitrogen and hydrogen and with sulphur and the halides. The rare earths remained in the intermediate position.

No hope can be offered of a simple explanation of the diverse phenomena which are associated with this subject. The speaker emphasized that to arrive at concrete conclusions new tools of measurement will become necessary and new criteria of purity and control, with extremely fine and narrow limits, will be called for. In the cases which he quoted, Dr. Strauss pointed out that these proved that ultra-pure metals were needed before any basis of a true understanding of behaviour under the effect of minute additions could be envisaged.

The Belgian Congo

(From Our Own Correspondent)

Brussels, July 20.

It was announced that the Belgian Colonial Council on July 17 examined the agreement between the Union Minière and the Rhodesian copper companies for the sale of part of the electric power to be generated at Le Marinel station, construction of which is now being started on the Upper Lualaba. This station is due for completion in 1957, and with a normal rainy season should produce annually 1,400,000,000 kWh. which is more than that of the three existing stations whose capacity is 1,125,000,000 kWh. yearly. It was to this agreement that Sir Ernest Oppenheimer referred at recent copper company meetings. The fact that the official communiqué states that the Council "examined" the draft agreement, and did not, as in other cases "approve" it rather suggests that final ratification has not yet taken place. Indeed, the Katanga Special Committee has raised some juridicial points complaining that it is the Committee and not the Union Minière which is entitled to export hydro-electric power, and it is believed to object also to the Rhodesian companies owning the transmission line in Katanga.

FINANCIAL RECORD OF COMPANIES

The June bulletin of the Banque du Congo Belge summarizes the financial record of the Congo companies in 1952, from which the following particulars are taken. At the end of the year there were 49 companies prospecting or working mines having a paid up capital of B.Fr.4,706,131,000 and reserves of B.Fr.3,220,245,000. Of these companies, 37 made a net profit amounting to B.Fr.3,332,832,000 while the remaining 12 made a loss of B.Fr.7,559,000. The mining companies paid dividends to the amount of B.Fr.1,824,774,000. These figures refer to the declaration of dividends during the year. The mining companies called on their shareholders for B.Fr.2,759,000,000 of new money.

The main capital increases were B.Fr.2,000,000,000 by the Union Minière; B.Fr.500,000,000 by Géomines; and B.Fr.118,000,000 by the Mines d'Or Belgika. The Governor General, M. Pétillon, has kindly communicated to your correspondent the following particulars of the census taken in the Congo on December 31 last. According to this there were in the Colony 81,940 non-natives and 11,788,711 natives. The following are the figures for the chief mining centres: Union Minière (Elisabethville) 9,735 and 108,144; Union Minière (Kipushi) 710 and 14,604; Jadotville 3,674 and 52,286; Kolwézi 2,113 and 31,349; Géomines (Manono) 487 and 29,441; Beceka (Bakwanga) 349 and 16,204; Kilo-Moto (Mongbwalu) 159 and 4,272; Kilo-Moto (Nizi) 143 and 3,402; Kilo-Moto (Watsa) 198 and 3,552; Kilo-Moto (Kilo Mine) 107 and 2,600; Forminière (Tshikapa) 163 and 5,557; Grands Lacs Africains (Butembo) 318 and 9,806.

Western United States

(From Our Own Correspondent)

Portland, Oregon, July 21.

As the present session of Congress progresses toward adjournment it appears that there is a tendency to go along with the President in approving legislation that he has asked for. This is indicated in the six months' extension of the excess profits tax and the refusal of an immediate cut in personal income taxes, the extension for one year of reciprocal tariff agreements, and the defeat of a proposal to increase the membership of the tariff commission which would have made it a partisan body instead of non-partisan as at present. All of this tends to the assumption that when the controversial subject of tariff revision comes up Congress will be inclined to give serious consideration to the President's wishes which are known to favour modification. Meanwhile the Simpson bill providing for a differential tariff on lead and zinc has been withdrawn and will be rewritten before being presented for further consideration. While this has been going on the Ways and Means Committee of the House approved a bill simplifying customs procedures so as to relax some restrictions and tend to facilitate imports.

[*The revised Simpson Bill was defeated in the House of Representatives on July 23 by 242 votes to 161.—Ed.* M.J.]

GOLD AND SILVER

Bills calling for an increase in the price of gold have been introduced in both House and Senate but the mining industry is not confident of their success. This seems to be a very touchy subject under whatever administration it is brought up and now some members of the administration advance the argument that a higher price would tend to undermine confidence in the stability of the dollar, a deduction whose logic is by no means clear to the gold miner. Callahan Zinc Lead Co. has commenced operation for the season at the Livengood gold placers in the Fairbanks district in Alaska. Callahan is operating a 5,500 cu. yd. dredge under contract with the Reconstruction Finance Corporation.

Sunshine Mining Co. of the Coeur d'Alene district, Idaho, largest silver mine in the United States, has entered the Nevada field by taking over the Mohawk mine in the Silver Peak district on a purchase contract. Plans call for sufficient development to double the present output of the mine with a new mill to match mine output.

COPPER

Kennecott is embarking on a second major operation at the Nevada division in the Ely district in preparing the Veteran ore body for open pit operation. This work is adjacent to the Deep Ruth where the company has made extensive preparation, involving a capital expenditure of $14,000,000, for underground operation of the Ruth ore body. The Veteran averages less than one per cent copper but as delimited should yield in excess of 60,000 tons of ore per foot of depth. It is of interest to note that in the pre-Kennecott days Ruth was operated as an open pit and Veteran as a shaft mine. The latter has not produced since 1914. Kennecott's first operation was on Copper River in Alaska where it had an unusually rich ore body and from this grew the present Kennecott Copper Corporation. Now, through Bear Creek Mining Co., its exploration subsidiary, it is back in Alaska about 50 miles from its former operations developing a deposit "inferred" to contain 200,000,000 tons of very low grade copper ore with associated values in gold, silver and molybdenum. Bear Creek is also starting a long range exploration project in Pinal County, Arizona, east of San Manuel's extensive operation.

At its Yerington, Nevada, operation Anaconda states that it expects to be on production in October. Overburden is being stripped at the rate of 1,000,000 tons per month and 10,000,000 tons have been removed to date in preparing the 35,000,000 ton ore body for mining. It should be noted that the development at Yerington applies only to the oxide ores. Beneath these is a sulphide ore body, the extent of which has not yet been determined. An important feature of the development has been the construction of an "all weather road" to the sulphur deposit which is to furnish the acid for leaching. This is 50 miles distant in Alpine County, California, and in most winters the locality lives up to its name.

NEWMONT INTERESTS IN LEAD-ZINC FIELD

Resurrection Mining Co., owned jointly by U.S. Smelting, Newmont and Hecla, which had acquired several of the prominent old mines in the Leadville district in Colorado, is curtailing its operation in this locality very materially and will concentrate on development in the White Caps area by means of 5,000 to 7,000 ft. of vertical and lateral development and several thousand feet of diamond drilling. Reason for the curtailment is the mining out of most of the larger ore bodies and failure of exploration to prove ore in sufficient quantity in areas that had been considered promising. Leasing will be encouraged and the flotation mill will continue to operate on custom ores. Another Newmont interest, Idarado in the San Juan district, largest copper, lead and zinc producer in Colorado, suffered a severe setback when its entire surface plant, with the exception of the mill, was destroyed by fire entailing a loss of $500,000.

GENERAL ACTIVITIES

The Interior and Insular Affairs Committee of the House has reported favourably on extension for two years of the programme for Government purchase of domestically mined tungsten ore. The present law, providing a price of $63 per s.ton unit, expires in 1956. Approximately 230,000 units have been purchased to date under the programme which has had the effect of stimulating production from a number of small mines. Another operation has suffered a severe setback by fire loss; the Three Kids mill, which supplied manganese concentrates to the operations of Manganese Inc., at Henderson, Nevada, in the Boulder Dam area was damaged to the extent that it is expected that eight months time will be necessary to restore the plant to normal operation. Unfortunately the fire occurred only a short time after production had been resumed at the Henderson plant after a prolonged shut-down due to an accident to the nodulizing kiln.

Golden Cycle Corporation, leading gold producer of Colorado which operates the Golden Cycle mill and tunnel which serve the entire Cripple Creek district, is entering the uranium field and has taken a lease from the Atomic Energy Commission near Uravan in the Colorado Plateau region. The ground has been explored by diamond drilling and Golden Cycle has started a 600 ft. vertical shaft in a development programme that will involve an expenditure of $150,000 to bring the mine to the point of production.

San Francisco Chemical Co. is materially expanding its phosphate operations in the Rocky Mountain region so as to increase its annual production of phosphate rock from 300,000 to 500,000 tons. This will involve opening an underground mine on a new deposit in Utah and underground mines to supplement production from two surface operations, in Idaho and Wyoming. Kaiser Aluminum and Chemical Corporation has put its fluorspar flotation mill at Fallon, Nevada, into operation and will be shipping 30 to 50 tons a day of concentrates to the Kaiser steel plant at Fontana, California.

PROBLEMS OF THE SOUTH AFRICAN GOLD MINING INDUSTRY—III

Water a Key to South African Development

By A. G. THOMSON

With this article we conclude a review of the supplies of native labour, electric power and water available to South Africa's gold mining industry. Of these three problems water supply is probably that of which there is least general awareness as the shortage is prospective rather than actual. In the long term, however, shortage of water above all else seems likely to place an upper limit on industrial development in the Vaal River basin. As this article seeks to show, a great deal, therefore, depends on what must be for South Africa the highly political issue of the relative priorities to be accorded to agriculture and industry in the allocation of limited water supplies.

An essential factor in the phenomenal expansion of mining and industry on the Witwatersrand has been the existence of a plentiful and comparatively inexpensive water supply. During the year ended March 31, 1952, the Rand Water Board sold 98,620,000 gallons of water daily, of which 33,380,000 gallons were supplied to crushing mines at an inclusive cost of 9.52d. per 1,000 gallons. The bulk of this water is drawn from the Vaal River, on which the new Orange Free State goldfield must also depend for its supplies.

The Vaal is not South Africa's largest river, but by reason of its flow, its comparatively low silt burden and saline content, and its facilities for storage, it is the largest one which can be tapped economically for mining and industrial purposes. The future development of the Southern Transvaal and the Orange Free State depends on the quantity of assured water which the Vaal can provide. Unfortunately this river is not an inexhaustible source from which water can be drawn in ever-increasing quantities to meet the requirements of continued expansion.

From a long-term standpoint water presents one of the most critical problems which the Union has to solve. More than five years ago Mr. J. P. Leslie, Chief Engineer of the Rand Water Board, warned the country that the capacity of the Vaal above Vereeniging would be wholly absorbed by 1975 if expansion continued at the existing rate.

Very careful planning will be necessary if the assured flow from the Vaal River is to be wisely divided between urban, industrial and mining development on the one hand and irrigation on the other. There are, however, a number of smaller rivers flowing into the Indian Ocean, which offer enormous potential resources for agricultural and hydro-electric schemes, and while the location of many secondary industries must continue to be governed primarily by the geographical distribution of gold and coal, proximity to the mines is by no means essential to every factory. In particular, industries serving export markets could with advantage be located near the coast. The importance of taking maximum advantage of available water resources is a strong argument in favour of decentralization of industry, on which growing emphasis has been placed in recent years. Steel, power, heavy engineering and other industries essential to mining development must continue to draw their water from the Vaal, but it is not essential for factories producing consumer goods to be located close to their principal markets. Any reduction in the aggregate demands on the Vaal which could be achieved by siting manufacturing industries in other parts of the country would be a useful gain.

WATER WAS ALWAYS SHORT

Shortage of water was one of the first and most critical obstacles to the development of the Rand, as was shown by the appointment by Lord Milner on the conclusion of the South African War of a commission to report on the sources available and the advisability of constituting a public body for carrying out and controlling a comprehensive water supply scheme. As a result of the commission's report, the Rand Water Board was formed in 1903 to take over all the existing water companies. A public utility corporation operating at no profit, it has the monopoly of supplying water to local authorities, the mining industry and the South African Railways over an area which has been extended from time to time and is now 4,300 sq. miles. This area extends from Springs and Heidelberg on the east to Welverdiend on the Far West Rand; it includes Pretoria in the north and Vereeniging in the south. The estimated total population within the limits of supply is 2,305,000. The total length of pipelines of 6 in. dia. and over in service is 477 miles, and from main pumping station on the Vaal River to the Board's reservoirs at Johannesburg, 35 miles away, the total lift is over 1,700 ft. There is probably no other undertaking in the world in which so much water is raised to such a height.

The original scheme had an ultimate capacity of 20,000,000 gallons a day, of which a first instalment of 5,000,000 gallons a day was brought into service in July 1923. By 1933 the full 20,000,000 gallons had been developed. The scheme has since extended from time to time to keep pace with the requirements of the mining industry, and the expansion of Johannesburg and the Reef. In 1934, the board purchased from the Government an additional supply of 70,000,000 gallons per day from the Vaalbank Dam, towards the cost of which it contributed £520,000. This dam was constructed above Vereeniging, the work being started at the beginning of 1934 and finished in 1937. At full supply level it submerges a surface area of 62½ sq. miles and extends upstream from the Vaal and Wilge Rivers for nearly 80 miles. Associated with this undertaking is the Vaal-Hartz scheme, which irrigates a settlement area exceeding 100,000 acres in extent and is capable of supporting 3,000 settlers.

REQUIREMENTS ON THE RAND

The Board's total abstraction rights amount to 225,000,000 gallons per day, made up of 215,000,000 gallons per day from the Vaal River and 10,000,000 gallons per day from underground sources in the Klip River Valley. The rights to abstract 29,375,000 gallons per day of raw water from the Vaal River have been disposed of to industrial users near Vereeniging, leaving a net quantity of 195,625,000 gallons per day available to the Board. The capacity of the pumping plant, purification system and pipelines is 100,000,000 gallons per day under normal load conditions. Peak loads of short duration in excess of this figure can be met by drawing on the storage capacity of the service reservoirs and by working under overload conditions. The total quantity of water raised by the Board from all sources during the year ended March 31, 1952, was equivalent to an average of 105,980,000 gallons per day. In addition, an average of 15,679,000 gallons per day was abstracted by authorized users from the Vaal River.

The Additional Water Supply (1946) Scheme, scheduled for completion during 1952, was designed to increase the potable water available by 20,000,000 gallons, making a total of 110,000,000 gallons per day. The Additional Water Supply (1949) Scheme will increase the total potable water available from 110,000,000 to 150,000,000 gallons per day and is estimated to cost £5,011,800. The scheme was due to be completed by September, 1954, but additional de-

mands by the mining industry have made it imperative that the major portion of it should be completed before that date. Indeed, as early as September, 1952, it became necessary to bring into supply more water than that provided by the 1946 scheme. To make this possible it was proposed to complete as soon as possible a section which would permit sufficient water to be pumped from Vereeniging to meet monthly peak demands up to 129,000,000 gallons per day. In endeavouring to accelerate this work in order to meet peak demands, the Board has been handicapped by difficulty in obtaining necessary supplies of steel plate.

PLANS FOR THE ORANGE FREE STATE

Although the intersection of water-bearing fissures has been a constant source of difficulty and delay in the development of Orange Free State mines, the deep-level water of this goldfield is so highly mineralized and so corrosive that its potential usefulness is greatly restricted. Since reconditioning would be costly, it was decided to disregard this potential source, at any rate for the time being. The average annual rainfall in the goldfield area is only 18 in., and on account of this very small precipitation, boreholes would be too precarious a source for large-scale use. It has been necessary, therefore, to look to the Vaal River for a dependable water supply.

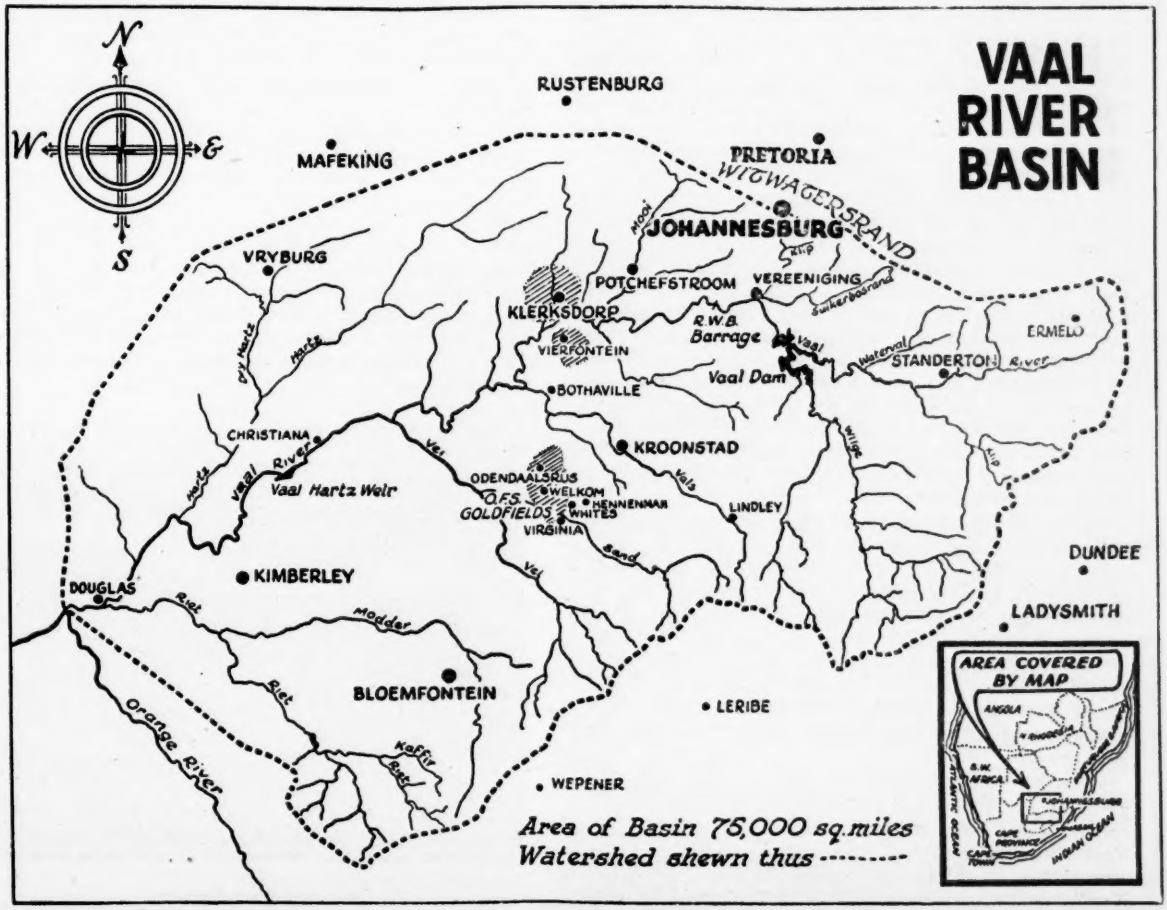
Estimates of the goldfield's water requirements are based on the experience of mines on the Rand. After allowances have been made for the higher rainfall on the Reef, the lower rate of evaporation, and the more extensive use of "mine" water, it is estimated that the average water consumption of Free State mines will be in the vicinity of 500 gallons for every ton of ore milled. On that basis it is expected that a daily supply of 30,000,000 gallons will be needed within the next ten years. Under the co-ordinating authority of the Natural Resources Development Council, the Department of Irrigation has constructed an intake tower in a natural river pool at Balkfontein a few miles east of Bothaville, from which it is planned to lift water at the rate of 16,000,000 gallons a day by 1955, and by stages to a maximum of 64,000,000 gallons a day.

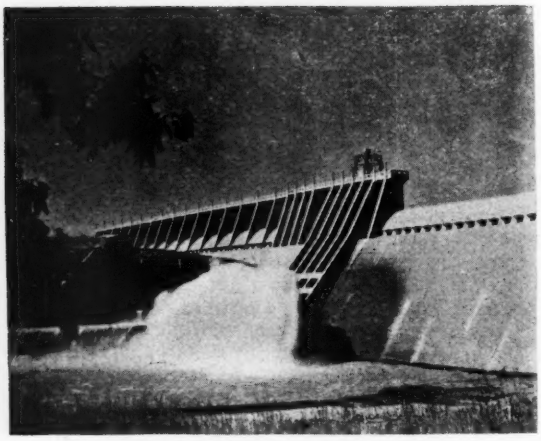
In siting the intake at Balkfontein, the guiding considerations were doubtless the question of cost and the importance of the time factor. By using a natural pool it has been possible to eliminate the need for weir construction, with consequent saving in time and cost. The site also has the merit of utilizing the waters of the Rhenoster and the Vals, both of which join the Vaal upstream from Balkfontein. The waters of two other Vaal tributaries, the Sand and the Vet, are at present lost to the goldfield, but to conserve their waters would present very difficult engineering problems while the flow is extremely variable. Should the development of the goldfield exceed present estimates, all sources of surface water might have to be harnessed.

LONG-TERM PROBLEMS

The Rand Water Board has calculated that, based on the records of low flow, the maximum assured flow of the Vaal River is :

(a) 400,000,000 gallons per day at Vereeniging if the existing storage provided by the Barrage and Vaaldam is used.
(b) 600,000,000 gallons per day at Vereeniging if the Vaaldam is raised 20 ft.
(c) 800,000,000 gallons per day at Kimberley if storage equal to the existing Vaaldam is, in addition, provided between Vereeniging and Kimberley.





The controlled flow of water from the Vaaldam

The Vaal River is already committed in prospect to meet the following major requirements :

	Mil. Gals. per day
Rand Water Board (existing statutory rights)	215
Kimberley Water Works	10
Free State and Far West gold mines as estimated by the Irrigation Department (1964)	30
Riparian Owners	110
Irrigation	200
	565

Mr. Leslie's statement that the capacity of the Vaal River above Vereeniging would be wholly absorbed by 1975 was based on these figures, but the actual quantity will be determined by the future development of the Vaal-Hartz Irrigation Scheme. The Irrigation Department has stated that the minimum below which the supply to irrigators at Vaal-Hartz must not fall is 200,000,000 gallons per day. If this must be drawn from assured water, the total already allocated or reserved amounts to 565,000,000 gallons per day. Given that additional storage is provided to bring the maximum assured flow of the Vaal River up to 800,000,000 gallons per day, this leaves 235,000,000 gallons which can still be allocated to other purposes. This is in any event not a very large reserve for a country which is still at a relatively early stage of development; yet the Vaal-Hartz irrigation scheme alone is designed to abstract a maximum of 540,000,000 gallons against its present minimum offtake of 200,000,000, which on present estimates is clearly an impossibility even if no further allocations were to be made for other purposes. It would therefore seem that quite apart from reconciling other conflicting priorities, future policy regarding the allocation of water for irrigation is of critical importance.

Up to 1935, the potable water taken by the gold mining industry from the Board was less than an average of 10,000,000 gallons per day. Consumption then rose steeply and in 1942 was just under 30,000,000 gallons a day. It then remained more or less static until 1949, when it increased to about 35,000,000 gallons per day. A small increase is anticipated between 1950 and 1960. The Board cannot, therefore, look for immediate relief to any lessening of the mines' demand, though some reduction may gradually come about through the closing down of existing producers.

Much of the water drawn off for urban and industrial purposes will be returned and re-used, and in this respect and in others the maximum economic use to which the Vaal River can be put will not necessarily be limited to the assured flow. Thus it has, for example, been calculated that, if sufficient storage were provided, the Vaal could be regulated so as to yield a gross average daily flow of 1,340,000,000 gallons per day for 60 years out of every 100.

WHAT IMMEDIATE ACTION ?

In a memorandum submitted in 1950 to a commission of enquiry on revising the Union's water laws, Leslie emphasized that, should the Board not be permitted to increase its abstraction rights from the Vaal River, it must immediately limit the consumption of water by restricting future developments within the limits of supply in the following order and manner :

(a) Reject all new applications for non-potable water.
(b) Refuse to increase the raw water abstraction rights of existing users.
(c) From some future date reject all new applications for potable water and limit consumers to their consumptions at that date.
(d) Prohibit the use of water for any purposes other than those required for the maintenance of health and for mining and industries.

Such restrictions are at best palliatives and would advance by only a few years the date when all further expansion between the limits of supply must cease and the population become static. As already pointed out, decentralization of industry could afford only limited relief, since it could be applied only to industries manufacturing consumer goods.

From Leslie's analysis it is evident that the Vaal River cannot be regarded as an inexhaustible reservoir capable of meeting an indefinite expansion of consumption for mining and industrial purposes, and at the same time supporting an over-ambitious programme of irrigation. To pipe water to the Rand from the perennial rivers of Natal or the Eastern Transvaal would scarcely be an economic proposition, while little of the water of the Orange River can be used for industrial purposes.

The future urban, industrial and mining development of the Southern Transvaal and Northern Free State is critically dependent on the quantity of assured water made available in the Vaal River. On the other hand, there are many other rivers which can be used for irrigation. The expansion of food production is among the most urgent of all the Union's needs, but there is no reason why it should be achieved at the expense of mining and industrial progress. There appears to be an unanswerable case for reserving the waters of the Vaal for the areas whose lifeline this river has become, and siting irrigation schemes in areas where their requirements can be accorded the highest priority without prejudicing the interests of other essential industries.

The Vaal River Barrage

Mid-Year Assessments of the Coal Industry

In the following article, received under recent date from our coal correspondent, statistics are presented of the coal mining industry in the United Kingdom during the first portion of 1953. Readers will note that Koepe winders are to be installed at Cwm Gwendraeth Colliery, S. Wales. A descriptive article on the installation of Koepe winders at a Scottish colliery appears on page 168 of this issue.

Having regard to the number of workers now in the mines, the output of coal during the first half of 1953 has not come up to expectations. There has been some improvement during the last two or three months but this has not been sufficiently marked to remove all anxiety about the prospects for next winter for the upward trend in consumption continues without abatement. In 1952 the inland consumption of coal was 28,000,000 tons greater than in 1938 and during the first half of this year it was 2,000,000 tons more than in the first half of 1952, so the recurrence of critical situations with regard to coal supplies cannot be attributed entirely to mining industry deficiencies.

OPTIMISTIC RESULTS

The production statistics for the first 27 weeks of this year are given in the table below which appertains to Great Britain, together with those of the corresponding period in 1952. The results for the last three months are somewhat better than is indicated in the table because production has lately been running at about 100,000 tons a week higher than at this time last year. This improvement is due largely to the greater output obtained during the extra shifts worked on Saturdays, each of which is now contributing about 800,000 tons to the total production.

Results for the first 27 weeks of 1952 and 1953 in Great Britain

	1952 (First 27 weeks)	*1953*
Saleable output of deep-mined coal (tons)	113,009,300	112,844,200
Saleable output of open-cast coal (tons)	6,254,900	6,111,900
Coal lost through disputes and other causes	3,943,100	5,645,900
Average number of mineworkers employed	711,900	720,800
Average shifts a week per mineworker	4.93	4.80
Output per manshift at the coalface	3.17	3.15
Output per manshift overall ...	1.20	1.21

It is, however, doubtful whether this improvement will make up for the loss incurred this year on account of the additional week's holiday granted to the miners. The Minister of Fuel and Power is evidently uneasy about this for he has recently decided to import a certain amount of coal from the Continent to enable winter stocks to be replenished without interfering with the export contracts entered into by the National Coal Board. During the next four months about 300,000 tons of large coal will be imported from France and the Saar coalfield. This somewhat anomalous situation has been caused partly by the excessive demands of industry and domestic consumers for high quality large coal, the supply of which is diminishing with increased mechanization in the pits. The National Coal Board have recently taken measures to correct this by increasing the prices of the higher grades and reducing those of the lower grades by amounts varying from 8s. 9d. to 1s. a ton.

Whilst there is a growing scarcity of large coal in Great Britain there is a surplus of it in some parts of Western Europe and the Minister of Fuel and Power claims some justification for importing some of this coal in exchange for larger quantities of small coal, but this policy is being widely criticized.

The results for Western Europe table, which has been compiled from statistics recently published by O.E.E.C., shows how Great Britain stands in comparison with the rest of Western Europe. There has been little change in the total output of coal in Europe during the last two years and the figures also show that the output per manshift in Great Britain is substantially higher.

Results for Western Europe

Country	*Production in metric tons June 1951 to May 1952*	*June 1952 to May 1953*	*O.M.S. in May 1953*
Great Britain ...	228,804,000	228,512,000	1.233
West Germany* ...	206,938,000	207,162,000	1.090
Poland	83,504,000	84,500,000	—
France*	56,430,000	56,533,000	0.924
Belgium	30,551,000	29,955,000	0.752
Saar coalfield ...	16,114,000	16,311,000	1.049
Netherlands* ...	12,735,000	12,640,000	—
Italy*	1,980,000	1,970,000	—
Austria**	5,185,000	5,179,000	—
Totals	642,641,000	642,762,000	

* Including lignite.
** Lignite only.

The preparation of the sites for two of the new anthracite collieries referred to in one of our recent issues is now in progress at Cwm Gwendraeth and Cwm Gors in South Wales. The contract for sinking the shafts at Cwm Gwendraeth has been given to the German firm of Schachtbau-Thyssen Gasellschaft because these shafts have to pass through difficult water-bearing strata and British firms with the necessary equipment for this class of work are fully occupied in other parts of Great Britain and overseas. Sinking operations will be carried out entirely by German technicians and workmen who will be accommodated in quarters provided for them on the site. The geological conditions at Cwm Gors are more favourable.

The shafts at both these new collieries will be sunk to the lowest seams to be exploited and the upper seams are to be worked on the horizon system. Koepe winders are to be installed at Cwm Gwendraeth but no decision has yet been reached on the type of winders to be used at Cwm Gors. Preparations are also being made to open a large drift mine to work the remainder of the upper anthracite seams in the Dulais Valley near Neath.

OTHER SOURCES OF FUEL AND POWER

Much attention is now being given to the exploitation of other sources of fuel and power to help in the conservation of coal in addition to the steps which are being taken to improve the thermal efficiencies of power plants and coal burning equipment. The Secretary for Scotland stated recently that the Government had accepted a recommendation made by a Committee to set up an experimental peat-burning power station in Caithness at which gas turbines are to be installed. About 600,000,000 tons of peat are available in this area and if this experimental plant is successful the Hydro-Electric Board for Scotland intend to embark on larger schemes of this kind in the Highlands.

The potentialities of atomic energy are, of course, of quite a different order. In answer to a question in the House of Commons on July 6, the Minister of Fuel and Power said that he and other Ministers had had discussions with experts from atomic energy establishments and with the Chairmen of the nationalized fuel industries on this matter but at present there is not enough data available to make a precise assessment of the probable effect of nuclear power on the coal industry in the foreseeable future.

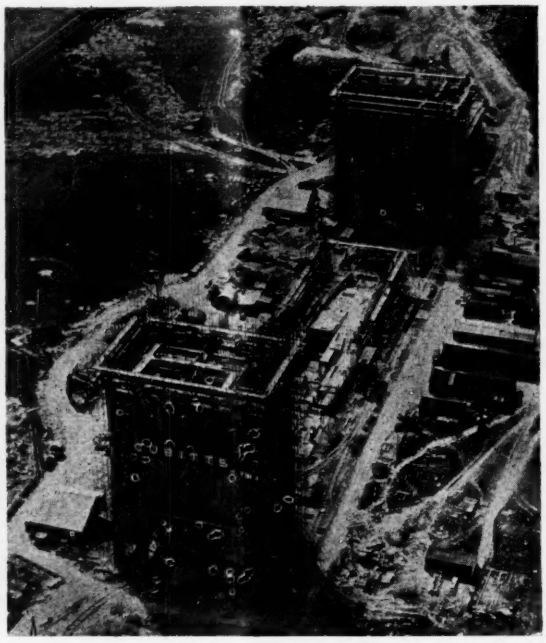
Koepe Winder Towers at Rothes Colliery, Fife

The Koepe Pulley winding installation was mentioned in our articles on the planning of shaft winding equipment as a basis for the construction of surface plant at collieries in the Ruhr which appeared in *The Mining Journal* of July 17 and 24. The following article presents a detailed description of the two Koepe winder towers now under erection at the Rothes Colliery, Fife, and emphasizes the original suggestion made that planning of such installations demands a recognition of many mining problems from coal flow to the topographical setting of such surface features as railways.

The two Koepe winder towers now under erection at the Rothes Colliery, at Thornton, Fife, are the only winder towers of their kind in Britain. The two towers will stand 193 ft. in height when completed.

At the moment No. 1 tower is 143 ft. and No. 2 is 125 ft. The structures are of reinforced concrete with metal frame windows and large louvres for ventilation purposes. Provision was made to accommodate the sinking headframes which were fitted with a protection arrangement to allow tower construction to proceed during shaft sinking. Temporary headframes will be replaced by internal steelwork.

Each tower will have four floors. On the first will be the banking level where decking of mine cars to and from cages will be carried out, while on the second will be fans for the ventilation of motor generator sets. The internal steel headframe extends from the shaft collar to this floor. The third floor will be the motor generator floor where generator sets serving the winders will be located. At this level access will be made to the Koepe guide pulleys set. An electric crane will be provided for the installation and maintenance of the motor generator sets. On the fourth floor the winder auxiliaries associated with the Koepe winders will be installed.



Aerial view of Rothes Colliery, Fife. The No. 1 Tower is in the foreground

Road and rail access will be provided, with hatchways on all floors to allow gear to be taken in or removed with the least possible labour. An electrically operated passenger lift is to be installed in each tower.

Between the two towers and extending beyond them is the 930 ft. by 60 ft. wide car hall. The floor of this building is to be from 10 to 13 ft. above ground level, and is so arranged as to give suitable gradients for the handling of mine cars. The gradients to be installed were determined from experiments carried out on a test track with the equipment which will actually be used. As a result of these experiments, much valuable information was obtained.

The car hall will house the tracks, creepers, rams and brakes to be used to conduct and control cars from both shafts to the three tipplers and return them to the shafts. A travelling crane with capacity of seven tons is to be installed in the central car hall to facilitate the handling of plant. Hydraulically powered hoists are to be installed in the east and west ends of the building for the transportation of material to and from ground level. The dual purpose fan house and sub station is being constructed at the end of the bifurcated fan drift from No. 2 shaft.

The entire output will be cleaned mechanically. Dense medium units will be installed in the preparation plant to deal with all coal from 8 in. to 1 in. All coal under 1 in. will be cleaned by Baum box, and one unit of 250 tons per hour capacity, which will operate on the Bird cycle, is to be provided. The treatment of fines will be accomplished by flocculation and provision is being made for the inclusion of froth flotation operations.

The coal will be transported from shuttling conveyors under the car hall by three 5 ft. inclined conveyors. Large coal will be effectively broken by crusher and all discard will be conveyed by aerial ropeway to waste land. A conveyor will be installed to transport small debris from the preparation plant back to a hopper in the car hall should underground storage be adopted.

One of the inclined conveyors will be utilized to carry stone from the car hall to the debris disposal plant. A crusher will be installed in this circuit so that large pieces of stone can be broken to sizes suitable for aerial ropeway buckets and an arrangement will also be incorporated to permit the loading of blaes, suitable for brick making, into wagons. This will in addition, enable triping coal to be loaded into wagons in the event of any serious breakdown in the coal preparation plant or the arising of a demand for that product.

The shafts are 500 ft. apart and 24 ft. in diameter. They are concrete lined. The level in each is now 1,600 ft. The first insets are constructed in both shafts at 1,220 ft. from the surface and the design of the remaining insets has been completed. Deep cement injections have overcome the trouble experienced with water which was encountered at depths and pressures hitherto unknown in Great Britain. At one stage the water was entering the shafts at 1,000 gallons per minute.

The design of the pit bottom will make use of the most up-to-date mine car handling equipment. The first horizon from which coal will be produced is 266 fathoms from the surface, and the north winder of No. 1 tower will serve this level. The other winder in No. 1 shaft will deal with the output from the lowest horizon 470 fathoms from the surface. From this latter position long mines will be driven to reach the position of the coals.

The area of available field is 10 sq. miles and the estimated total reserves are 183,000,000 tons. Daily output will be approximately 5,000 tons and the yearly output 1,250,000 tons. Of the 2,206 men employed, 2,026 will work underground.

Diamond Recovery by Grease Belt

Although all diamondiferous gravels in South-West Africa have a non-affinity to grease, this characteristic becomes a major problem when the gravels are too large to be treated by an electrostatic separator. The Consolidated Diamond Mines of South-West Africa have now instituted a system which makes use of a newly-devised "grease belt machine" and a chemical process which satisfactorily resolves this problem. The system is of local application only, and is fully described in the following article which first appeared in *Optima*, Vol. 3 No. 2, a quarterly review published by the Anglo American Corporation of South Africa.

In the orthodox method of recovery, which is used to recover diamonds in the pipe deposits at Kimberley and Cullinan, the bulk of the mined ore is first concentrated, and then passed over an inclined table covered with a thick layer of grease. Water flows over the "grease table" and washes the wet gravel particles off the grease. The diamonds, however, do not become wet, because their surfaces are water-repellent. They adhere to the grease, and are thus effectively separated from the gravel. The surface of the grease table is scraped periodically to remove the diamonds.

But the diamonds from the Consolidated Diamond Mines (referred to hereafter as C.D.M. diamonds) will not adhere to grease in their natural state, and they cannot be recovered in this way. Until recently, the only method used to recover these diamonds was to pick them out of the concentrates by hand. That method was inefficient, and losses were high.

In order to develop an improved method of recovering C.D.M. diamonds, investigations were started at the Diamond Research Laboratory in 1948 to find out why these diamonds would not adhere to grease. It was found that the surfaces of the diamonds were coated with mineral salts. The layer of salts, being soluble in water, caused the diamond surfaces to become wet whenever they came into contact with water; and the film of water that formed round the diamond acted as an insulator, which prevented the diamond surface from coming into contact with the grease on the grease tables. Water is used in all diamond recovery processes, both as a medium of conveyance and as a cleansing agent; but the mineral salts adhere very firmly to the diamonds, and cannot be removed during the normal cleansing process.

WATER-REPELLENT SURFACES

Experiments were then carried out to find a method of removing the coating of salts from the C.D.M. diamonds, so that their surfaces would become water-repellent, or "non-wettable," like those of the diamonds treated at Kimberley and Cullinan. Investigation showed that a water repellent surface could be produced on the diamonds by treating them with an alkaline solution of oleic acid; moreover, it was found that oleic acid could be used in the crude form in which it occurs in a locally produced substance known as whale (or fish) acid oil.

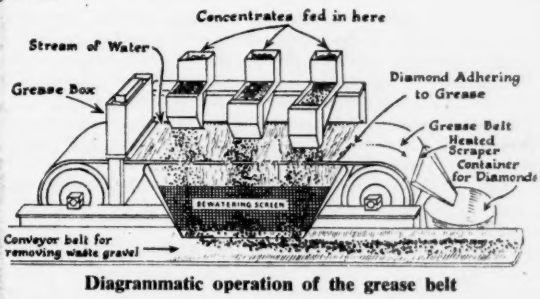
This treatment is now used at C.D.M. The chemical solution and the diamondiferous concentrate are mixed together in a steel cylinder, which is 5 ft. long and 30 in. in diameter. It contains a helix, 4 in. high with a pitch of 4 in., which is welded to the inside circumference of the cylinder. When the cylinder is rotated, the helix "screws" the gravel and the chemical solution through the cylinder, discharging them evenly and continuously. After treatment in this cylinder, which is known as a conditioner, the surfaces of the diamonds are visibly water repellent, and the gravel particles remain almost unaffected and easily wetted.

But there still remained an obstacle to the use of the orthodox grease table as a method of recovery. It was found that, while the larger particles of gravel were unaffected by the conditioner, dust that was mixed with the gravel became sufficiently water-repellent to adhere to the grease. The dust soon formed an impervious layer on the grease table and prevented the diamonds from adhering to the grease; and the water stream still washed away the diamonds with the larger particles of gravel.

To overcome this difficulty it was necessary to devise a machine that was capable of producing a continuously fresh grease surface. The machine is known as a "grease belt."

The grease belt consists of an endless rubber belt, 2 ft wide, which is mounted on two drums about 7 ft. apart. The belt travels across a flat table, which provides the necessary support for the section of the belt between the two drums. The upper surface of the belt is covered with a layer of grease.

The whole unit is mounted in a steel framework so that the transverse axis of the belt is inclined at about 14 deg. to the horizontal. The longitudinal axis of the belt is arranged at right angles to the direction of the flow of gravel.



Diagrammatic operation of the grease belt

At one end of the belt is a box to hold the grease to be applied to the belt surface. A weighted piston in the box forces the grease through the box and on to the belt. Before coming into contact with the belt, however, the grease is warmed by electrical heating elements, which are placed at the bottom of the box. This ensures that the grease in the box is softer than that on the belt, and can thus be applied to produce a perfectly even and smooth surface of grease.

An electrically-heated scraper is placed at the opposite end of the belt, and is adjusted so that the edge of the scraper just touches the surface of the grease on the belt. As the belt turns, the scraper removes anything that adheres to the grease. Any grease that is removed by the scraper is replaced by the box as the belt rotates.

After treatment in the conditioner, the diamondiferous gravels are dropped from a height of a few inches on to the surface of the grease belt. A stream of water flows over the grease and washes the wettable gravel particles away. The treated diamonds stick to the grease, and are taken out of the water stream by the sideways rotation of the belt. As they reach the scraper, the diamonds drop off into a receptacle, which stands in a tank of boiling water. The boiling water removes any grease that adheres to the diamonds; and the diamonds are taken periodically from the receptacle.

The grease belts and the chemical process are used to treat the larger sizes of the gravel at C.D.M. After operation for a year, continuous careful sampling of the plant tailings has revealed that more than 99 per cent of the diamonds in these gravels have been recovered by this method.

The smaller sizes of gravel are being treated in an electrostatic separator, the application of which to diamondiferous gravels was also developed by the Diamond Research Laboratory.

TECHNICAL BRIEFS

An Inexpensive Method of Treating Mine Timbers

Utilization of the natural flow of sap in a growing tree is announced in the United States as a possible method of allowing mine operators to afford more durable timbers, according to a U.S. Bureau of Mines' report. The other equipments necessary to complete the operation are listed as an old motor truck inner tube and chromated zinc chloride as a chemical preservative.

It is not only dangerous but expensive to replace weak mine timbers. For this reason, American engineers of the Bureau consider that the currently used pressure method of timber treatment is too expensive for those operators who work small mines, and consequently the Bureau is aiding the research for a rapid and inexpensive method of timber preservation which would fulfil a two-fold need; it would solve the problem so far as the small operator is concerned and simultaneously would bring relief in the current shortage of timber.

The method is known as the "collar method," and is being investigated by the U.S. Bureau of Mines in co-operation with the Palmer Coking Coal Co. Inc. The method is stated to have been developed by the U.S. Department of Agriculture, and is named from the practice of making a collar from the inner tubes which holds a solution of chlorated zinc chloride against a growing tree until this preservative can be absorbed.

In practice, the initial step is to remove a band of bark about 2½ ft. in width at a position situated low down on the trunk. The exposed sap wood is then cut to permit a penetration of the solution. The collar is then set in position, is made leak proof, and is filled with the preservative. The natural flow of sap accomplishes the remainder of the operation, as the preservative is drawn into the trunk by the evaporation of moisture from the leaves.

In the experiments conducted by the Bureau, 28 trees have been treated to date by the method at a considerably lower estimated cost than that demanded by the pressure method now in use with cut timbers. Certain timbers from trees treated in this manner have been installed in a coal mine, while others have been stored in an open timber yard. A complete record is being kept of each tree and for each length of timber cut from it, and these records show that the treated timbers have withstood the effects of open storage more effectively than untreated wood. At the moment, however, it is premature to form any definite conclusion on the comparative performances of the installed timbers.

Concentration of Cerium Ores

The concentration of Bastnaesite and other cerium ores has been described by Zadra and co-workers (U.S. Bur. Mines, Rept. Invest. No. 4919, 1952). Bastnaesite is a fluorcarbonate of the rare earths and the particular ore described had barite, silica and calcite associated with it. The mineral did not occur in a pure form at all, the highest grade particles always being contaminated, especially with barite. Barite and bastnaesite have specific gravities of 4.5 and 5.0 respectively and should, therefore, be separable by gravity. Unfortunately, however, the minerals were considerably interlocked and, in addition, their fine-grained texture rendered grinding followed by flotation not very practicable.

The method finally adopted was to carefully stage grind the ore to a −65 mesh and then hydraulically classify it into two sand products and slimes. The slimes were rejected and the sand products concentrated on a table. The dried products were screened into four or more fractions each of which was then passed through a high-intensity magnetic separator. The grade of the final product varied from 40 to 60 per cent rare earths.

Sintering Equipment for Nicaro Nickel

The General Services Administration announces that Sintering equipment is being installed in the Government-owned Nicaro Nickel Works in Cuba. With the new equipment, Nicaro would be able to produce nickel in the form of pellets rather than as nickel oxide powder, the Administration said. The pellets could be used in both electric and open hearth furnaces to produce nickel steel. Nicaro now produces nickel in oxide powder form which can be used only in electric furnaces. The sintering equipment would cost $750,000 and should be in operation in about eight months. The Nickel Processing Corporation, the joint Cuban-American firm that operates Nicaro, conducted a series of exhaustive tests in a pilot plant to make sure that sintering could produce the pellets before ordering the new equipment. The G.S.A. estimates the new sintering plant would pay for itself in about three years because the sintered product was worth 2 c. lb. more than the powdered oxide.

Treatment of Low-grade Titaniferous Ores

A soda sinter process for the treatment of a Tahawus magnetite containing 18.8 per cent TiO_2, 57.5 per cent Fe_2O_3, 11.8 per cent SiO_2, 7.5 per cent Al_2O_3, 0.5 per cent V_2O_5 and 0.5 per cent MgO has been reported by McMillan and co-workers (U.S. Bur. Mines, Rept. Invest. No. 4912). The ore, ground to −20 mesh is mixed with 0.4 parts of sodium carbonate and 0.18 parts of −20 mesh coke and then roasted at 1050-1080 deg. C. The iron present is reduced to a metallic sponge and the titania remains in the slag.

A three-stage grind with an equal amount of water is then followed by magnetic or gravitational separation of the metallic iron yielding a product with a purity varying between 85 and 89 per cent depending upon the particle size. The slag is roasted in air at 850 deg. C. and leached with caustic soda to yield sodium vanadate. The residue, after leaching with dilute sulphuric acid is subjected to a bake with sulphuric acid and is then leached with water. The titania is precipitated by seeding and boiling the leach solution.

A similar process has also been applied to titaniferous iron ore obtained from Rhode Island and has apparently been successful.

Germanium Ingots Produced by Continuous Three-phase Process

A furnace specially designed for the production of germanium ingots by a continuous three-phase process has lately been developed. In the operational method employed, the fluffy and light germanium oxide is placed in a small carrier tray at the bottom of an inclined slope. From that point a miniature cable, operated by winch, pulls the tray into a furnace containing hydrogen gas. The germanium oxide is heated in this furnace to 650 deg. C. for a period of four hours and subsequently is moved up the incline to a second furnace where it is again heated in hydrogen for an hour at 1,000 deg. C.

This operation causes the germanium to fuse into a solid ingot, after which process it is pulled into a third working section before removal. The germanium crystals used in transistors are manufactured by heating minute 100-gramme pieces from these germanium ingots in a special induction furnace.

Direct Steel-Making in the Electro Furnace

The possibilities of making steel directly from iron ore in a Duplex electric furnace operation was discussed at a recent meeting in the U.S. of the Electric-Chemical Society. Mr. H. S. Newhall, of the Pittsburgh Electromelt Furnace Corp., said more and more people were using hot metal in electric furnaces and for this reason it was now felt to be perfectly feasible to make steel from ore in a two-step electric furnace operation. The first step is reduction of the ore in an electric smelter for production of medium carbon grade pig-iron. The second step is conversion of this pig-iron into refined steel in an electric refining furnace with the use of air or oxygen.

Leaching Copper Ores *in Situ*

A new technique is promised by the Copper Creek Consolidated Mining Company to be applied at the Old Reliable Mine in the Broken Hill district of Arizona, by which it is proposed to leach the ore *in situ* by a solution of sulphuric acid, following studies by the U.S. Bureau of Mines. Hitherto, leaching of oxidized ores have been confined to open pit operations. Some production has already been affected, but the contract between the company and the D.M.P.A. envisages a production of 2,750 s.tons of copper. It is hoped that output may start in some six months' time.

METALS, MINERALS AND ALLOYS

Monday saw the adjournment of the U.S. Congress until next January unless the necessity of authorizing an increase in the national debt should require it to be recalled for this purpose in October. Following on the rising of Parliament at the week-end the legislative machines of Gt. Britain and the United States will now be out of action at any rate for the next two months. Congress went into recess with its extensive legislative programme largely unfulfilled. It did, however, pass a reciprocal trade extension Act for another year, but the revision of the Taft-Hartley Act and measures for the reorganization of mining administration and various other bills will have to wait for next year. On the whole the President so far has been largely successful in getting Congress to support his plans for directing public policy and minimizing the likelihood of developments which would affect progress in the mineral industry.

In the United States Senator McCarthy, Chairman of the Permanent Committee on Government Operations, has announced that he is considering an investigation into the defence stockpile programme, with particular reference to minerals. In his somewhat flamboyant style he charged the previous administration with bad planning which " had well nigh ruined the domestic mining industry and caused the nation to be dependent on foreign supplies." The enquiry, if pursued, should be interesting and perhaps entertaining.

COPPER.—The outstanding event of the week in the metal markets has been the reopening after 14 years of dealings in copper on the London Metal Exchange. The price at the close of the dealings—£212½ for cash and £197 for three months—has confirmed the apprehension if not the expectation of lower prices generally. This has been reflected in the coyness of consumers here, in the United States, and on the Continent, and has been indicated in the quotation of futures on the New York Exchange. In the United States the A.S. and R. reduced their quotations to 28½ c. on Tuesday, having found sales at the 29 c. level unsatisfactory though Kennecott, Anaconda, and Phelps Dodge have not yet reduced their quotations.

If previous experience, when lead and zinc were freed from price control is any guide, lower prices may be looked for and should diminish the threat of large scale substitution by aluminium. The main thing is that the Metal Exchange is now free to resume its former role of the world's price barometer for the industrial metals, and consumers everywhere can hedge their future requirements and know what their major raw materials are going to cost them in their estimate of production costs—a very important element in our export trade which is likely to become closely competitive.

The reduction in the copper price to a figure lower than was expected in many quarters will not give much satisfaction to the Chilean Administration which has been trying very hard to get rid of some of its growing accumulation, now said to be 65,000 tons, to the United States Government. Local reports which, inspired perhaps by wishful thinking in Santiago, speak of 5,000 tons of Paipote blister having been sold to West Germany through the medium of an Argentine firm and which would be re-exported to Poland, if confirmed are hardly likely to influence favourably the policy of the United States, which has just suspended deliveries of molybdenite to Italy because of evidence that it was to be shipped to Antwerp and loaded into Polish vessels. At the end of last week Anaconda's contracts with the Chilean Miners' Union's workers at Chiquicamata and Potrerillos expired, and the Union is now demanding in addition to the 15 per cent wage increase recently declared by the Chilean Government, other benefits equivalent to 75 per cent in basic pay. Anaconda is said to have declared that they cannot meet such large demands unless the Government adjusts exchange rates or provides some tax relief. Last week we noted that Kennecott had already decided to reduce production by 30 per cent at the El Teniente property so it looks as though economic forces might restrict the accumulation of unsold copper in Chile but hardly in a way agreeable to the Chilean Government.

LEAD.—Lead has been a quiet market with prices easier after the holiday. The American tone has again tended to follow London prices. A Moroccan trade administration has lowered the export tax on lead ore to 3 per cent for the first 3,000 tons shipped by each company. The local mines are said to have suffered heavily from falling prices and high labour costs.

TIN.—Tin quotations on the Metal Exchange have not, on balance, shown much change this week, but on Tuesday the Straits price fell to £554½, possibly due to the London market being closed over the holidays as the Eastern price recovered sharply next day.

No further factual developments are in evidence since last week. It looks as though we may have to wait for some definite evidence of production being sensibly curtailed by a fall in prices before it is possible to say that tin has bottomed. Speaking broadly, in the first half of the year production showed little change from the same period in 1952, while consumption has not yet shown any improvement as a result of lower prices. Any action which may follow from efforts to secure a re-convening of an international Tin Conference can hardly become effective for some months at the earliest. President Eisenhower has signed legislation abolishing the R.F.C., and replacing it with a Small Business Administration. The R.F.C. will be unable to make any more loans after the end of September and the new organization will have much smaller loan powers. Whether the new Small Business Administration may entertain any different policy in regard to tin development, cannot, of course, be known for certain, but there is no obvious reason to expect it.

By a printer's error in our last week's issue the figure at which bonuses to Chinese miners in Malaya were to cease should have read S.$300 per picul and not S.$3 as stated.

ZINC.—Prices on the Metal Exchange have been somewhat easier this week since the holiday. In the United States the market continues unsettled with the change in the basing prices originating with the abandonment of the A.S. and R. by the E. St. Louis quotation for prime Western. The old system is maintained by the American Zinc Sales Company distributors for the American Lead and Zinc Smelting Company. Zinc was quoted lower on Wednesday at 10.75/11.50 c. E. St. Louis. U.S. consumption in May was 88,426 s.tons against 91,544 in April. The U.S. Tariff Commission will open hearings on November 5 on zinc imports, following on lead import hearings on November 3, to get the views of interested persons.

Further reports published by the Montreal *Financial Post* regarding discoveries at Bathurst Camp in New Brunswick state that the assays by the Anacon lead mines and the St. Joseph Lead Company's subsidiary at Leadridge are the best ever made in the Province, one section giving up to 29.1 per cent zinc and 11.93 per cent lead with an overall average of 16.08 per cent lead and zinc, together with by-product values in silver, copper and gold. It is suggested that the high grade and large tonnage available may make the discovery the most important recorded in the world during recent years.

ALUMINIUM.—Opposition to a policy of expanding supplies of aluminium available to United States consumers is reported this week from the C.I.O., which objects to the proposed merger of the Washington Water Power and Puget Sound Power and Light Companies. The Aluminium Import Corporation, sales agent for Alcan, as seeking to be joined as a party in the case arising from the petition by the Department of Justice referred to last week to cancel the Alcoa contract for the purchase of 600,000 tons of Canadian aluminium. A joint conference of the Senate and House of Representatives has struck out the appropriation by the Interior Department of $1,000,000 for transmission lines to carry electric power from Bonneville to the Harvey Machine Company's aluminium plant at Dallas, Oregon. The company had received a government certificate of necessity for the production of 54,000 s.tons of metal yearly.

The U.S. Steel Corporation is installing a pilot line at its research centre to try out coating steel with aluminium to increase its resistance to corrosion and heat. Aluminium coated steel is now being marketed by at least one steel company.

TITANIUM.—The Henderson Nevada Plant, operated by the Titanium Metals Corporation of America, subsidiary of the National Lead Company and the Allegheny Ludlum Steel Corporation, said to be the first large-scale plant to get going, has

gone into commission. The plant, which is a converted magnesium undertaking, is rated at a capacity of 3,600 tons a year. The American Cyanamid Company's Calco division is to build a new plant for the production of titanium dioxide at a cost of $14,000,000 near Savannah. Calco has already two other plants producing titanium dioxide.

TUNGSTEN.—The Ministry of Materials announce as from August 1 the price has been reduced to 327s. 6d. and for scheelite 312s. 6d. per l.ton unit delivered consumer's works, thus making the British price for tungsten more competitive with the Continental quotation. The generally firm tendency in the international market continues. The future of the price is obviously very much at the mercy of political developments. If the truce talks in Korea are going to result in improved relations between East and West, with the possibility of opening up trade with China, then should China be offering quantities for export, prices may come down sharply. If on the other hand the truce talks should break down then we may well see present prices maintained or even advanced.

The Tungsten-Molybdenum Committee of the I.M.C. has been dissolved as from July 31 last. U.S. deliveries of tungsten concentrates under Government purchase programme up to July 28 are given as 283,495 s.ton units out of an authorized total of 3,000,000 s.ton units.

Iron and Steel

By prodigious effort the British steel industry produced over 9,000,000 tons of ingots in the first half of this year. Since the end of June there has been some shrinkage, but when due allowance has been made for loss of output during the holiday period, it still seems probable that the forecast of 17,500,000 tons for the year will be exceeded. Pig iron production advances more slowly and it is doubtful if the planned increase of 1,000,000 tons over last year's output will be achieved. For this reason alone it is eminently satisfactory that the acceleration of scrap supplies has surpassed the most sanguine anticipations. In addition to much more liberal deliveries of home scrap surprisingly large consignments are coming in from Canada. Works are building up their stocks and the scrap famine has been overcome.

This being the high peak of the holiday season the market is very quiet, but the outlook is still favourable. In the reconstruction of plant the British steel industry got off to a flying start and is now reaping the benefits. British prices are below world levels and producers have no reason to quail at the prospect of keener competition. The reduction in the volume of imports, which has been made possible by record breaking outputs, promises a progressive easement of the levy imposed on the steel makers to finance purchases of high cost material abroad and the Ministry of Supply is now considering a revision of the maximum price schedules. The first reduction in the post-war period is not improbable.

In any event the steel shortage with all its embarrassing consequences has been overcome. The only outstanding deficiency is in the supply of steel plates, which are now being imported from Austria. Sheet makers are now able to cope with home requirements and are also handling a spate of orders from U.S.A. and Canada. Rollers of heavy steel products are also expecting a relaxation of import restrictions which will restore the Australian trade to something like its former proportions and there is also scope for a considerable expansion of trade with the South American republics.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market opened on Wednesday, August 5, with a very large attendance of members and representatives of non-members who were especially invited for the occasion, which by general consent was one of great significance to the metal trade of the world. The first day's turnover was extremely satisfactory at 3,100 tons, and the price range during the day was very much narrower than was the case with lead and zinc, doubtless due to the experience gained by members on the previous occasions. Most people, however, feel that a level of £200 per ton is on the low side, and that prices will pick up as consumers re-enter the market after the period of holding back awaiting the withdrawal of the Government as the sole supplier of metal in the U.K. The Government Broker was not called upon to supply any metal on Wednesday morning, and only one transaction for cash metal was done in the Ring at £215 per ton, giving a backwardation of about £12 10s. per ton, which cannot be considered out of the way in view of all the existing circumstances, and it should be emphasized that this was arrived at without any intervention from the Government.

Lead and zinc prices have shown a weaker tendency during the last few days, and the undertone for both metals is uncertain with consumer demand falling off on both sides of the Atlantic. It appears that the August position for lead may become very tight, and a backwardation of over £4 per ton already exists.

Tin has been relatively featureless, although the undertone as reported last week remains better, and the Eastern price on Thursday morning was equivalent to £591¼ per ton c.i.f. Europe.

Closing prices and turnovers for the week are given in the following table:

	July 30		August 6	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£570	£572	£576	£577¼
Three months	£570	£572¼	£572½	£577½
Settlement	£570		£577½	
Week's turnover	530 tons		305 tons	
Lead				
Current month	£96½	£96¾	£92½	£92¾
Three months	£92	£92¼	£87½	£87¾
Week's turnover	6,225 tons		4,500 tons	
Zinc				
Current month	£73⅞	£74	£72½	£72¾
Three months	£74	£74¼	£72¾	£73
Week's turnover	3,675 tons		4,075 tons	
Copper				
Cash	—		£214	£216
Three months	—		£197½	£199
Settlement	—		£216	
Turnover 5th/6th Aug.	—		4,075 tons	

AUGUST 6 PRICES

COPPER, TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £225 per ton
Crude (70%) .. .. .. £210 per ton
Ore (60% basis) .. .. .. 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, 99·5% £150 per ton
Bismuth (min. 4 cwt. lots) 17s. lb.
Cadmium (Empire), 13s. 10d./14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £280/£295
Osmiridium, £40 oz. nom.
Osmium, £65/70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 5s./£70 10s. ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 74d. f.oz. spot and f'd
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 65% 9s. 0d. lb. c.i.f.
60% 8s. 9d. lb. c.i.f.

Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 8s. 0d. per ton c.i.f.
" " (concentrates) £14 8s. 0d. per ton c.i.f.
" " Refractory £14 0s. 0d. per ton c.i.f.
Baluchistan Metallurgical .. £16 11s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 103s. 10½d. per unit c.i.f.
Wolfram (65%) .. .. .. World buying 305s. - 315s.
" " .. .. .. 327s. 6d. Selling
Scheelite .. .. World buying 290s. - 300s.
" .. .. 312s. 6d. Selling
Tungsten Metal Powder .. .. 24s. 8d. - 27s. nom. per lb. (for steel manufacture) (home)
Ferro-tungsten .. .. .. 21s. 10d. - 22s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £49 15s. 0d. per ton
Manganese Ore U.K. (48%-50%) .. .. .. 6s. 1d. per unit
Brass Wire .. .. 2s. 6½d. per lb. basis
Brass Tubes, solid drawn .. 1s. 11½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Gilt-edged were firm despite the floating of a new £80,000,000 4 per cent Gas Stock. Sentiment was aided by the rise of another £89,000,000 in the sterling area gold and dollar reserves, a particularly encouraging feature at the present time of year which is normally difficult. It should, however, be remembered that the total reserves are still well below an adequate level. There was a small deficit with E.P.U. of £4,000,000, half of which must be settled in gold. This can be attributed to the more liberal trade policy and heavy tourist spending abroad during the summer months. At home, there was an overall revenue surplus for the week of £25,500,000; the overall shortfall for the year to date is now some £113,200,000 less than last year. This is another encouraging feature. The sale of steel undertakings to private enterprise has already begun in a small way and this may bring about some reduction in the national debt during the next few months.

Kaffirs gave a much better showing at the end of the old account. Demand came principally from the Continent and Johannesburg where there were reports of shop support. Dealings for the new account on Wednesday began rather uncertainly with little turnover. The market is being closely watched for signs of any recovery in this section after its long decline. The July returns aroused considerable interest. Generally speaking, lower costs and higher profits were achieved. Van Dyk, however, incurred a loss due to the fire on the property; it is believed that this is covered by insurance. East Champ d'Or recorded another small loss and clearly the future of this mine must rely on the profits which it can make from uranium and sulphuric acid production. Witwatersrand Gold is to close down. The mine made an increased loss for July of £18,300. The property is a very old one. It will not go into liquidation and it is hoped that favourable conditions may enable part of it to reopen at some future date. The question of liquidation will be reviewed from time to time.

The O.F.S. shares were better with the general Kaffir trend but the improvement was much less marked than on the Rand. Freddies North and South both recorded losses in the first crushing returns and Western Holdings a small profit. All the figures were much as had been anticipated. Welkom lost some of their earlier steam when the July profit figures showed a decline of nearly £4,000 against those of June. Merriespruit also failed to respond to the general rise. The second deflection in the K.A.2 borehole failed to intersect the very rich reef band previously cut.

The main focus of attention was upon copper shares. Considerable end of account buying occurred. Estimates concerning the opening price of free copper have been many and varied, and latterly, it was clear that the views of the optimists had gained ground. When actual dealings started on Wednesday with a spot price of around £215 a ton and £200 a ton forward, there was a sharp reversal in share prices. This came too late to be recorded in the list below. Even the excellent Nchanga figures failed to put an effective brake on this downward slide. It is, of course, too early to judge the future price level of the metal with so many conflicting factors on hand. Certain factors appear to stand out. Firstly, a free metal price will undoubtedly bring a breath of fresh air into artificial trade conditions, and secondly, the Rhodesian copper companies are probably best able to compete with the new conditions due to their modern plant and low working costs.

The tin share market was much steadier than for some time past, but there was little real interest in either the Eastern or Nigerian section.

Lead/zincs were much better on improved Continental demand for the metal and the belief that home manufacturers may re-enter the market shortly. On the longer view, next year's profit figures will be important and should give a good guide to the working costs of the individual mines.

Consolidated Murchison rose sharply and good buying of the shares found the market ill supplied with stock.

International Nickel also improved on the maintained quarterly distribution of 50 c. a share.

	Price Aug. 5	+ or — on week
FINANCE		
African & European	2 7/16	+ 1/16
Anglo American Corpn.	6 1/16	+ 1/16
Anglo-French	17/6	+ 6d
Anglo Transvaal Consol.	21/3	.....
Central Mining (£1 shrs.)	29/4½	+ 1/10½
Consolidated Goldfields	46/3	+ 1/-
Consol. Mines Selection	25/7½	+ 2/6
East Rand Consols	2/7½	+ 1½d
General Mining	3 1/4	+ 1/8
H.E. Prop	36/10½	+ 7½d
Henderson's Transvaal	7/3	—3d
Johnnies	52/6	+ 2/6
Rand Mines	3½	+ 1/16
Rand Selection	34/4½	+ 5/-
Strathmore Consol.	32/6	+ 1/3
Union Corp. (2/6 units)	28/6	+ 1/9
Vereeniging Estates	3 1/16	+ 1/8
Writs	35/-	+ 1/6
West Wits	43/9	+ 7½d
RAND GOLD		
Blyvoors	41/-	+ 6d
Brakpan	10/7½	+ 7½d
City Deep	19/4½	+ 2/6
Consol. Main Reef	19/4½	+ 1/10½
Crown	33/1½	+ 7½d
Daggas	3 1/4	+ 1/16
Doornfontein	23/3	+ 3d
Durban Deep	37/6	+ 1/10½
E. Daggas	15/-	+ 1/6
E. Geduld .. (4/- units)	32/6	+ 2/6
E. Rand Props	2 11/16	+ 11/16
Geduld	4 1/16	.....
Govt. Areas	13/-	+ 3d
Grootvlei	22/6	+ 1/6
Libanon	10/-	+ 4½d
Luipaards Vlei	23/3	+ 3d
Marievale	19/-	+ 6d
Modderfontein East	17/6	.....
New Kleinfontein	20/6	+ 1/1½
New Pioneer	18/9	+ 1/3
Randfontein	43/-	+ 7½d
Robinson Deep	10/6	+ 6d
Rose Deep	13/9	+ 1/3
Simmer & Jack	5/-	+ 4½d
S.A. Lands	23/1½	+ 1/10½
Springs	4/9	+ 4½d
Stilfontein	28/6	+ 6d
Sub Nigel	2 3/8	+ 1/8
Van Dyk	6/9	+ 6d
Venterspost	13/9	+ 9d
Vlakfontein	14/3	+ 1/-
Vogelstruisbult	33/-	+ 9d
West Driefontein	6 29/32	+ 1/32
W. Rand Consolidated	55/7½	+ 7½d
Western Reefs	49/4½	+ 1/1½
O.F.S.		
Freddies	10/3	+ 3d
Freddies N.	9/4½	+ 3d
Freddies S.	9/1½	+ 3d
F. S. Geduld	2 13/16	.....
Geoffries	15/3	.....
Harmony	23/6	+ 6d
Loraine	8/9	+ 1½d
Lydenburg Estates	13/-	+ 3d
Merriespruit	9/-	+ 1½d
Middle Wits	16/3	+ 9d
Ofsits	37/6	+ 7½d
President Brand	28/3	+ 6d
President Steyn	22/-	+ 7½d
St. Helena	13/3	+ 1½d
Virginia Ord.	13/-	+ 3d
Welkom	21/4½	+ 1/10½
Western Holdings	3 31/32	+ 1/8
WEST AFRICAN GOLD		
Amalgamated Banket	1/6	.....
Ariston	6/3	.....
Ashanti	20/6	+ 1½d
Bibiani	5/7½	.....
Bremang	2/1½ XD	.....
G.C. Main Reef	3/6	.....
G.C. Selection Trust	6/-	.....
Konongo	2/4½	— 1½d
Lyndhurst Deep	1/-	.....
Marlu	1/3	+ 1½d
Taquah & Abosso	3/3	.....
AUSTRALIAN GOLD		
Boulder Perseverance	2/6	— 1½d
Gold Mines of Kalgoorlie	13/-	— 3d
Great Boulder Prop.	10/3	— 1½d
Lake View and Star	14/9 XD	— 3d
Mount Morgan	18/3	— 4½d
North Kalgurli	14/3	.....
Sons of Gwalia	6/9	.....
South Kalgurli	7/9	— 7½d
Western Mining	13/3	+ 3d
MISCELLANEOUS GOLD		
Cam and Motor	9/-	— 1½d
Champion Reef	4/6	.....
Falcon Mines	6/6	.....
Globe & Phoenix	26/-	.....
G.F. Rhodesian	5/-	+ 3d
London & Rhodesian	4/10½	— 1½d
Motapa	1/7½	— 1½d
Mysore	2/7½	.....
Nundydroog	5/6	.....
Ooregum	2/7½	.....
Oroville	10/3	+ 6d
MISCELLANEOUS GOLD (contd.)		
St. John d'El Rey	24/6	.....
Zams	26/-	+ 6d
DIAMONDS & PLATINUM		
Anglo American Inv.	3 3/16	— 1/16
Casts	18/-	— 6d
Cons. Diam. of S.W.A.	4½	.....
De Beers Defd. Bearer	62/3	+ 1/-
De Beers Pfd. Bearer	14⅜	+ 1/4
Pots Platinum	7/6	— 1½d
Watervaal	13/-	.....
COPPER		
Chartered	51/-	+ 1/3
Esperanza	4/3	+ 3d
Indian Copper	4/1½	.....
Messina	3 15/32	+ 1/32
Nchanga	6 11/16	+ 1/4
Rhod. Anglo-American	49/3	+ 2/-
Rhod. Katanga	8/4½	+ 4½d
Rhodesian Selection	14/-	+ 1/1½
Rhokana	18½	+ 1/2
Rio Tinto	20½	+ 1/2
Roan Antelope	13/1½	+ 7½d
Selection Trust	30/7½	+ 1/4½
Tanks	57/9	+ 2/6
Tharsis Sulphur Br.	41/3	.....
TIN (Eastern)		
Ayer Hitam	21/9	+ 6d
Bangrin	8/-	+ 1½d
Gopeng	7/6	+ 3d
Hongkong	5/3	.....
Ipoh	12/6	.....
Kamunting	7/6	.....
Kepong Dredging	4/-	— 7½d
Kinta Tin Mines	8/6	+ 3d
Malayan Dredging	21/9	— 3d
Pahang	12/-	— 1½d
Pengkalen	7/3	.....
Petaling	8/1½ XD	— 1½d
Rambutan	10/-	.....
Siamese Tin	8/3	+ 1½d
Southern Kinta	12/-	— 3d
S. Malayan	19/3	+ 3d
S. Tronoh	7/-	.....
Sungei Kinta	9/6	.....
Tekka Taiping	4/6	.....
Tronoh	21/6	+ 3d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	8/9	+ 1½d
Beralt Tin	26/3	— 3d
Bisichi	3/6	.....
British Tin Inv.	13/-	.....
Ex-Lands Nigeria	3/9	.....
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	9/-	— 1½d
Gold & Base Metal	3/4½	.....
Jantar Nigeria	12/3	— 9d
Jos Tin Area	11/3	.....
Kaduna Prospectors	2/-	— 3d
Kaduna Syndicate	2/-	+ 1½d
London Tin	4/9	.....
United Tin	2/-	.....
SILVER, LEAD, ZINC		
Broken Hill South	43/1½	— 7½d
Burma Mines	1/6	+ 1½d
Consol. Zinc	26/3	+ 1/3
Lake George	9/10½	+ 1½d
Mount Isa	32/6	+ 1/6
New Broken Hill	21/6	+ 1/6
North Broken Hill	53/9	.....
Rhodesian Broken Hill	10/4½	+ 3d
San Francisco Mines	18/3	+ 10½d
Uruwira	3/-	.....
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	44/6	.....
Associated Manganese	44/6	+ 2/3
Cape Asbestos	20/1½	+ 1½d
C.P. Manganese	51/10½	— 1/1½
Consol. Murchison	21/-	+ 2/3
Mashaba	4½	.....
Natal Navigation	3½	.....
Rhod. Monteleo	5/-	.....
Turner & Newall	55/7½	+ 2/1½
Wankie	13/1½	— 3d
Witbank Colliery	3 1/16	.....
CANADIAN MINES		
Dome	$31	.....
Hollinger	$27	+ 1/2
Hudson Bay Mining	$82	.....
International Nickel	$74	+ 1½
Mining Corpn. of Canada	£4½	+ 1/8
Noranda	$123	.....
Quemont	£6½	.....
Yukon	4/-	.....
OIL		
Anglo-Iranian	7 13/16	+ 1/32
Apex	39/4½	.....
Attock	35/-	+ 7½d
Burmah	52/6	+ 3/6
Canadian Eagle	30/-	+ 9d
Mexican Eagle	21/6	.....
Shell (bearer)	4 1/16	.....
Trinidad Leasehold	28/-	+ 9d
T.P.D.	24/-	+ 6d
Ultramar	23/-	+ 1/-

COMPANY NEWS AND VIEWS

Nchanga and the Current Copper Outlook

Neither the strike of African employees in October/November, 1952, nor the continued shortage of coal supplies prevented Nchanga Consolidated Copper Mines from achieving record results in the fields of production, sales and profits during the year ended March 31 last.

As a result, states Sir Ernest Oppenheimer, whose statement appears on page 176, it was possible, after providing for dividends amounting to 15s. per £1 unit, to maintain the policy of financing internally the company's capital expenditure programme. For this purpose no less than £3,100,000 was allocated to general reserve thereby increasing this fund to £7,000,000, a sum equal to the company's issued capital.

During the greater part of the company's financial year under review the copper price has been at peak levels, but since the end of March last, and before dealings commenced in copper on the London Metal Exchange, the price fall had been of the order of £30 per ton. Moreover, the first day's trading on the Metal Exchange in copper on Wednesday of this week witnessed a further substantial drop of around £40 to £210 per ton for cash.

In the coming months, therefore, considerable interest will centre around the copper price, the prospects for which are much brighter, even on a medium term view, than the size of the price falls effected on the first day of free trading on the London Metal Exchange would indicate. Buyers on this side of the Atlantic have obviously been holding off pending free dealings in the metal; U.S. consumption remains at a very high level and, in any case, that country in the long run will become increasingly reliant on imports of copper; there are, as well, grounds for believing the target set for the stockpile has not yet been reached; the United States has also a threatened strike on its hands of the Mine, Mill and Smelter Union which, should it eventuate, could change the consumers' demand schedules considerably; and finally, the fact that Chile has at present an estimated 60,000 tons for disposal can hardly be likened to Damocles' sword overhanging the market.

While there are no doubt some bearish factors which should be taken into account, shareholders in Nchanga will easily recall that the company made handsome profits when the copper price was standing at £180, and now that the company has moved to N. Rhodesia the savings in taxation alone provide a generous shock absorber. Moreover, relatively lower receipts per ton in the current year will be countered, to a large extent, by the company's big tonnage capacity which will show a further increase on the current year's excellent throughput with the bringing into commission of its third stage extensions, and also by extending the present mining methods to include open-pit working, which would most certainly be a relatively low cost operation.

Technically speaking, the company is well prepared to weather less ideal conditions than have been experienced over the past few years. The financial side of the picture is also impressively strong. Total assets are shown in the balance sheet at £28,646,214 (£22,898,982), which includes current assets of £11,870,857 against £9,789,704. Total current liabilities amounted to £10,815,952 (£8,567,245), of which provision for taxation on profits to date amounted to £5,501,076 against £3,893,013.

During the year to March 31 last the tonnage of ore milled rose from 1,512,900 s.tons to 1,984,400 s.tons. Sales of copper and concentrates expanded from £16,184,816 to £22,004,471, while the stock of copper and concentrates at the end of the company's financial year was valued at £1,749,643 against £1,168,385. The net profit, after all charges including tax liability totalling £5,293,576 (£3,726,646), was £8,748,525 compared with £6,255,600. The interim dividend of 5s. per £1 stock unit absorbed £1,750,000 (nil), and the declared final payment of 10s. required £3,500,000, the same as in the preceding year. After providing £3,100,000 (£2,000,000) to general reserves, and nil (£750,000) to the sales equalization reserve, the forward balance was left at £508,641, which was in sharp contrast to the £110,116 brought in.

Sir Ernest Oppenheimer is chairman. Meeting, Nkana, Northern Rhodesia, August 26.

Geevor Pays 45 Per Cent

Geevor Tin Mines, the important Cornish tin producer, experienced a fall in profits, before tax, of £107,363 to £115,462 during the year ended March 31 last.

Year to Mar. 31	*Working Profit*	*Taxation*	*Net Profit*	*Dividend*	*To Reserve*	*Carry Forward*
	£	£	£	s. d.	£	£
1953	115,462	70,655	44,807	2 3	19,727	9,555
1952	222,825	126,801	96,024	2 6	41,654	9,630
1951	246,906	104,000	142,906	2 6	64,396	9,720

This sharp fall was, in part, cushioned by the lessened offtake in taxation which declined by £56,146 to £70,655 but even so the company found it necessary to reduce the final dividend payment by 3d. to 1s. 6d. per 5s. unit making, with the interim already paid, a total for the year of 2s. 3d. (2s. 6d.) equivalent to 45 per cent compared with 50 per cent in the preceding year. This required a net amount of £25,155 (£27,090) and after allocating £19,727 (£41,654) to general reserve the forward balance was left slightly lower at £9,555 compared with £9,630 brought in. The preliminary statement announcing the foregoing results also showed that in the previous year £20,000 was provided against loss on investments and £8,524 was written off furniture and plant. The dividend is payable to members registered August 17. Mr. George W. Simms is chairman. Meeting, London, September 9.

Lahat Mines May Go Into Voluntary Liquidation

Production by tributors of The Lahat Mines during the year ended March 31 last amounted to 121¼ tons of tin concentrates compared with 131 tons in the previous year. Although the decline in output was less than 10 tons and the average Singapore price per ton tin over the period covered by the latest accounts only fell by roughly £10 per ton (£944 5s. per ton compared with £955 10s. in the previous year) it is a measure of the large fluctuations in the tin price in 1951 that 131 tons brought in £14,937 against £8,689 during the year under review.

This was the chief item comprising the gross revenue although gross income from interest and dividends helped materially, advancing from £1,050 to £1,766.

Year to Mar. 31	*Gross Revenue*	*Total Expenses*	*Taxation*	*Net Profit*	*Dividend*	*Carry Forward*
	£	£	£	£	£	£
1953	10,549	5,089	2,231	3,229	2,475	2,789
1952	16,287	5,600	6,571	3,315	3,937	2,035
1951	55,443	5,383	31,166	19,303	14,550	2,757

After providing for all expenditure at the mine and in London profit, before tax, at £5,460 showed a decrease of £5,227 compared with the preceding year. The tax burden was some £4,300 lighter so that the net profit figure was a mere £86 lower than in the preceding year. The distribution was reduced to 9d. (1s. 3d). per 5s. share on the £30,000 issued capital and the forward balance was left stronger at £2,789 compared with £2,035 brought in.

As there is only a limited life remaining in the company's main producing area and it has not been found possible to secure further areas at a reasonable price in the vicinity, coupled with the fact that the present workings are low-grade, the company is considering an offer of approximately £21,000 received for its property and fixed assets in Malaya. A resolution authorizing the directors to sell these assets will be put to shareholders at the annual meeting to be held in London on August 21 next. If the offer is accepted it is estimated that upon liquidation a distribution of from 9s. to 10s. per share could be made to shareholders.

Angola Diamond in 1952

The net profit of the Angola Diamond Company (Diamang) for 1952, after all deductions for amortization, reserves, and contractual and statutory charges, including the participation of the Province of Angola of 86,536,333 esc. (80,844,637 esc.) amounted to 120,472,150 esc. compared with 112,548,416 esc. in 1951. The transfer to legal reserve of 11,311,938 esc. (10,567,926

esc.) reduced net profits to 109,160,211 esc. (101,980,490 esc.), and after adding this to the balance brought in of 135,433,185 esc. (98,652,696 esc.), and deducting the amount of the bonus for 1951 paid in January last, and the interim dividend for 1952 paid in February last, there remained a balance of 187,543,396 esc. compared with 176,183,185 esc. The company is proposing to pay a final dividend of 25 esc. (same) per share, which would absorb 40,750,000 esc. (same), leaving a balance of 146,793,396 esc. to be carried forward.

Wit Gold to Close Down

Witwatersrand Gold Mining Company having incurred losses for each of the last four months has announced that the mine can no longer be worked at a profit and therefore it has been decided to close it down. It is not, however, intended to place the mine in voluntary liquidation at this stage but to leave it in such a state that it could be reopened without a great deal of re-equipment if conditions some time in the future warrant. The question of whether the company should be liquidated will be reviewed from time to time. Meanwhile, steps are being taken to reclaim the underground machinery during which period certain blocks of ore and milling will be continued on a reduced scale.

In making this announcement the company reminds shareholders that at the last annual meeting, Mr. K. Richardson, chairman, mentioned that the profitable working of the mine was becoming increasingly difficult and that the continuance of operations for any length of time was open to doubt.

New Mining Company Formed in South Africa

A new mining company has been formed in South Africa with a nominal capital of £1,000,000, which will concentrate on base metal mining, and will be known as "Die Federale Mynboumaatskappy, Bpk" (Federal Mining Company Ltd.). The formation of the company has been undertaken jointly by "Federale Volksbeleggings" (Federal National Investments) and "Bonuskor." These two corporations will, it is reported, transfer their existing mining interests to the newly-formed company in exchange for shares valued at more than £500,000 which would be issued immediately. No shares will be made available to the public at this juncture but this will probably be effected at a later date.

Fabulosa Mines' Reduced Production and Profit

Fabulosa Mines Consolidated, which is incorporated in Bolivia, showed a loss on operations for the year 1952 of Bs.26,917,875. Total production from the company's mines totalled 701.4 l.tons fine tin compared with 840.8 l.tons for the previous year, a decrease of 139.4 l.tons fine. The average grade of ore extracted dropped to 1.40 per cent Sn. Dr. T. Elio is President.

Mountain Copper Pays More

The consolidated profit and loss account of the Mountain Copper Company for 1952 showed that the net profit for the year, after all charges including taxation, was £116,270 compared with £130,776. The parent company whose net profit, after all charges including taxation, was £70,383 compared with £70,399, paid 8d. per 2s. stock unit on the £150,000 issued capital compared with 7½d. per stock unit in the preceding year. This required a net amount of £27,500. The parent company's forward balance at the end of 1952 was £33,186 compared with £30,303. Mr. R. E. Binns is Chairman.

Conditions Unchanged in Tavoy, Burma

Conditions in the Tavoy district of Burma altered little during the year, stated Mr. J. R. Farquharson in his statement accompanying the report and accounts of Tavoy Tin Dredging for the year ended December 31, 1952. No mining operations were possible during the year and the net loss on the year's operations was £10,771 against £18,293. The debit balance in the profit and loss account at the end of 1952 was £2,687 compared with a profit of £8,084 brought in. Three of the company's four dredges were kept on a repair and maintenance basis throughout the year while the Khamounghla dredge remained in a sunken condition. Meeting, London, August 19.

Talerng Tin Reduces its Loan Account

The net income of Talerng Tin Dredging for the year ended April 30, 1953, after all charges, was £6,051 compared with £8,980 in the preceding year. The directors report that the loan from London Tin Corporation has been reduced to £12,500 and the interest paid up to March 31 last. Mr. J. R. Farquharson is chairman. Meeting, London, August 19.

Attock Oil's Production and Profit Expansion

During 1952 Attock Oil, the Pakistan producer, raised its total production by 316,805 bbl. to 989,545 bbl., an increase which was due almost entirely to the coming into operation of the Dhulian field. The group profit, after all charges including taxation, was £361,448 compared with £139,058. Total distribution at 20 per cent compares with 12½ per cent paid in 1951 and required a net £198,000. The carry forward at the end of 1952 was £232,993 compared with £229,545.

Mining Men and Matters

Mr. G. C. Heikes has resigned his position as chief of the Development Division, American Embassy, London, and is now in practice as a consultant in California.

Mr. W. Parry James, of the Colonial Mines Service has been transferred from Cyprus to the Gold Coast Mines Department.

The North British Rubber Company and the Dominion Rubber Company have announced that the Sales and Branch Service Organizations of the two companies will be consolidated in order to give more efficient service and a quicker distribution of goods both at home and overseas. North British will undertake the distribution in the United Kingdom of all products previously handled by the separate sales division of the two companies, while Dominion Rubber will undertake the distribution of the two companies' products overseas. The products of both companies will be manufactured at Castle Mills, Edinburgh, and Heathall, Dumfries.

NCHANGA CONSOLIDATED COPPER MINES

NEW PRODUCTION, SALES AND PROFITS RECORDS

The sixteenth annual general meeting of Nchanga Consolidated Copper Mines, Ltd., will be held on August 26 at Nkana, Northern Rhodesia.

The following is an extract from the statement by the Chairman, **Sir Ernest Oppenheimer,** which has been circulated with the report and accounts:

The results for the year ended March 31, 1953, show that new records have again been achieved by your company in the fields of production, sales and profits, and in consequence it has been possible, after providing for dividends amounting to 15s per unit of stock, to maintain the policy of financing internally the company's capital expenditure programme.

During February, 1953, a Bill was presented to the United Kingdom Parliament to provide for the transfer to Northern Rhodesia of the registration of this company, and of other companies in the Rhoanglo group; the Bill was duly passed by both Houses and the Act received Royal Assent on May 6, 1953. In terms of this Act your company will, as from an early date in 1954, cease to be incorporated in the United Kingdom and will become incorporated under the provisions of the Companies Ordinance of Northern Rhodesia, thus completing the process of removal from the United Kingdom.

Questions of power supply continue to receive the closest consideration from your Board. The thermal power generating stations at the four big copper mines were interconnected during August, 1952, thereby ensuring to all the most efficient usage of available power and the greatest possible safety from breakdown.

Ownership of this interconnection system and other assets of the Northern Rhodesia Power Corporation is being acquired by Rhodesia Congo Border Power Corporation, Ltd., a company which has recently been formed in Northern Rhodesia and in which your company has a 25 per cent. interest.

This new corporation will also take over the responsibility for the importation of hydro-electric power from the Belgian Congo, which we hope will be available early in 1957, and has recently concluded an agreement with the Export-Import Bank of Washington for a loan of up to £8 million.

This money will be usd to finance extensions to the existing power supply system as well as to meet certain expenditure in connection with the import of power from the Congo. Your company in common with the other three producing companies, will guarantee a quarter of the repayment and interest obligations of the Power-Corporation to the Export-Import Bank of Washington, which obligations are to be satisfied by supplies of copper and cobalt.

As to the long-term policy, it is confidently expected that active development of the hydro-electric scheme within Northern Rhodesia, on the Kafue River, will be commenced at an early date, following the recent setting-up of the Kafue River Hydro-Electric Authority—on which the Rhoanglo group is represented by Mr. W. Marshall Clark. The appointment of this authority followed commendably soon after the acceptance in principle by the Northern Rhodesian Government of their consultants' recommendations for the establishment of this scheme. A further and larger scale project in Southern Rhodesia, known as the Kariba Gorge Scheme, is receiving the active attention of the Southern Rhodesian Government.

Since the close of the financial year considerable interest has been centred on the copper price which has dropped some £20 or £30 per ton since March. The Ministry of Materials which, since the end of 1939 has been responsible for the purchase of United Kingdom requirements, has decided that the supply position is such that trading in this metal can once again return to the free market. The London Metal Exchange will in consequence re-open for dealings in copper on August 5.

Given adequate coal supplies and freedom from industrial disputes, it is anticipated that production for the current year will be further increased with the commissioning of the remainder of our third stage extensions, and in this connection members will be interested to know that the Board has under consideration extending the present mining methods to include open pit working, for which, our consulting engineers advise us, a section of the company's property is eminently suitable and which would achieve a better long-term balance in the supply of ore.

Copies of the annual report and accounts may be obtained from the head office, Kitwe, Northern Rhodesia, or from the transfer offices at 44 Main Street, Johannesburg, and 11 Old Jewry, London, E.C.2.

DIVIDENDS

Anglo-Greek Magnesite 4%
E. Austin and Sons (London) 13½%
Barrow, Hepburn & Gale 10% *i* (Sept 10)
Boulder Perseverance 10%
British Tyre and Rubber 7½% *i*
Champion Reef Gold Mines of India 6% (October 9)
Climax Rock Drill 3½% (Sept. 23)
Consolidated Tin Smelters 12½% (September 12)
Geevor Tin Mines 30%
General Electric 75 c. q.
General Electric Co. 7½% (Oct. 1)
International Nickel 50 c. (U.S.) (Aug. 24)
Johnson, Matthey and Co. 12%
Metal Industries 8% (September 4)
Nigerian Electricity Supply 6%
Nundydroog Mines 5½% (September 18)
Wankie Colliery 5% *i* (Sept. 30)

i interim

Metal and Mineral Trades

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